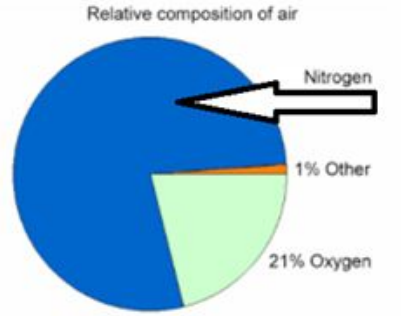
KEY

7th Grade Science: Weather and Climate
Core Assessment Study Guide

Ch. 1 The Air Around You (pg. 6-26)

1. The chart on the right shows the percentage of gases that comprise our atmosphere. Use the chart to answer the questions below.

a. *Which gas is the most abundant in our atmosphere?*	**NITROGEN**
b. *What percentage of the atmospheric gases does this gas compose?*	**78%**



2. Felix Baumgartner jumped from the stratosphere after he climbed to 128,100 feet (39,045 meters) in a helium-filled balloon on Sunday morning Oct. 14, 2012.

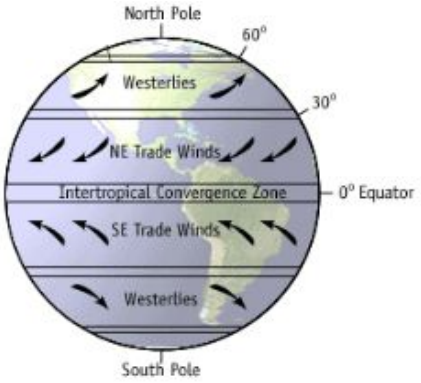
a. As his helium-filled balloon **increased altitude**, what happened to the **pressure** on the outside of the balloon?	**PRESSURE DECREASES**
b. What happened to the **temperature** during his ascent (rising higher)?	**TEMPERATURE DECREASES**
c. Was it **more dense** when Felix **jumped** or when he **started his climb**? **Explain** why you believe this is true.	**MORE DENSE AT SEA LEVEL SO WHEN HE STARTED TO CLIMB**

3. **List the 4** main layers of the atmosphere in **order** from the **Earth's surface** to **outer space**. **Describe 1 or 2 reasons why each layer is important to life on earth.**

a.TROPOSPHERE	WEATHER OCCURS, Contains carbon dioxide for producers to photosynthesize, oxygen for consumers to respire, water vapor for hydration and photosynthesis, nitrogen gas to be "fixed" for nutrients
b.STRATOSPHERE	CONTAINS OZONE LAYER
c.MESOSPHERE	burns up meteors entering Earth's atmosphere
d.THERMOSPHERE	SATELLITES, divided into the Ionosphere and Exosphere: bounces back radio waves, has satellites orbits for weather, GPS, and plate movement when predicting earthquake activity

Ch.2 Weather Factors (pg.34-65)

4. **Use the figure below** to indicate at what **latitude** lines the wind systems listed in the chart are located.



a. Doldrums	0 THE EQUATOR
b. Trade Winds	0-30
c. Prevailing Westerlies	30-60
d. Polar Easterlies	60-90

e. Which wind system determines our weather here in the US?	PREVAILING WESTERLIES
f. From where does this wind originate?	THE WEST

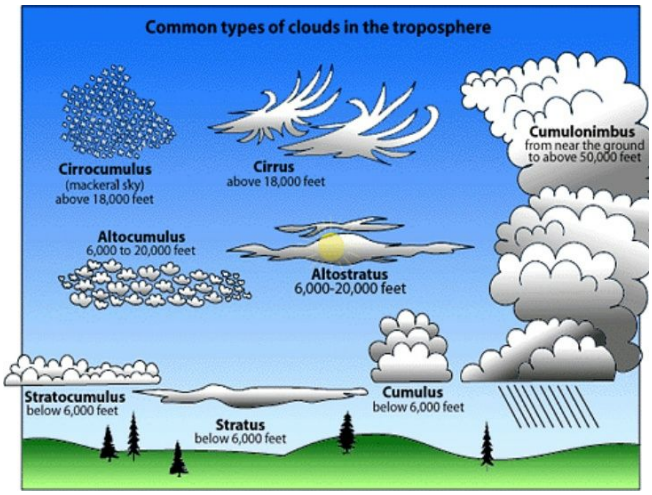
5. Which of the two thermometer readings below measures the air temperature?	DRY BULB

6. Would you expect the temperature of the wet–bulb thermometer to be higher on a humid day or on a dry day? Explain your answer	HIGHER TEMPERATURE ON A HUMID DAY BECAUSE IT HOLDS MORE MOISTURE

Complete the chart using the data given.	
Dry-bulb reading	20°C
Wet-bulb reading	15°C
Difference	

Dry-Bulb Reading (°C)	Difference Between Wet- and Dry-Bulb Readings (°C)				
	1	2	3	4	5
10	88	76	65	54	43
12	88	78	67	57	48
14	89	79	69	60	50
16	90	80	71	62	54
18	91	81	72	64	56
20	91	82	74	66	58
22	92	83	75	68	60
24	92	84	76	69	62
26	92	85	77	70	64
28	93	86	78	71	65
30	93	86	79	72	66

7. Describe **Cirrus, Cumulus and Stratus Clouds** and the types of weather associated with each of them.



Cirrus	**HIGH ALTITUDE, ICE CRYSTALS, STORM**
Cumulus	**FAIR WEATHER**
Stratus	**LOW LEVEL FLAT CLOUDS, PERIODS OF RAIN**

Ch.3 Weather Patterns (pg.70-98)

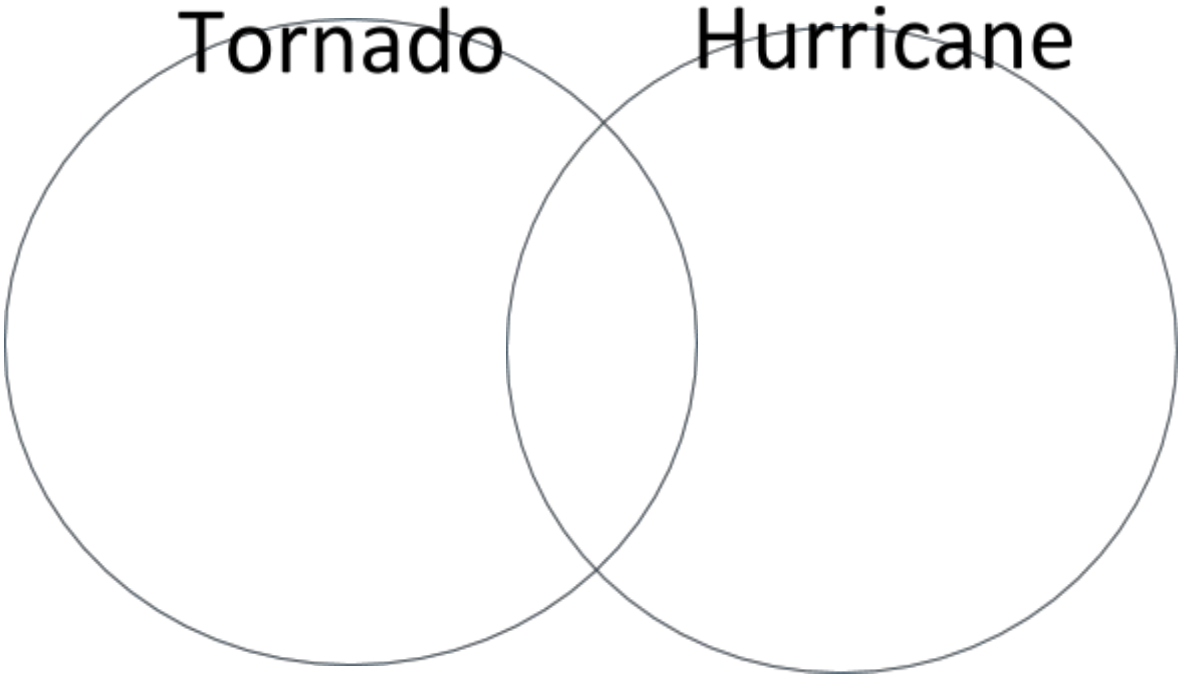
8. The United States Weather Bureau issued hurricane warnings before Hurricane Betsy moved over land areas. State two actions that the United States Weather Bureau most likely advised coastal residents to take to prepare for Hurricane Betsy.

a. EVACUATE TO HIGHER GROUND
b. BOARD UP HOUSES, TURN OFF ELECTRICITY

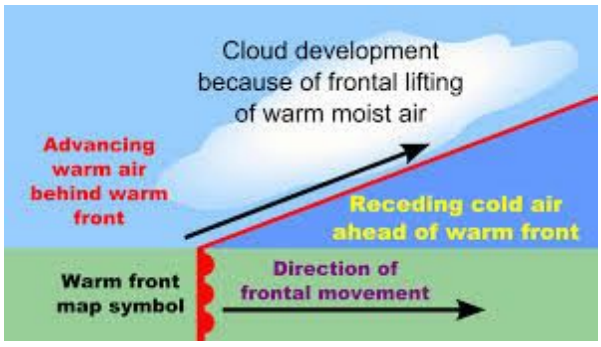
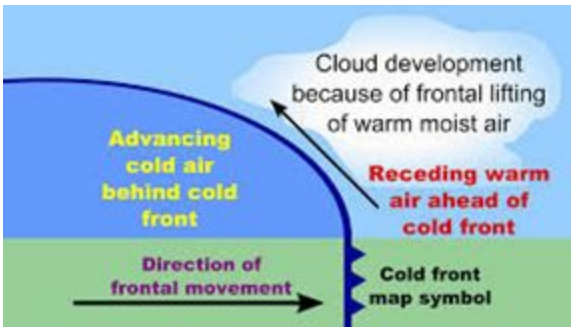
9. Fill in the chart below about Tornadoes.

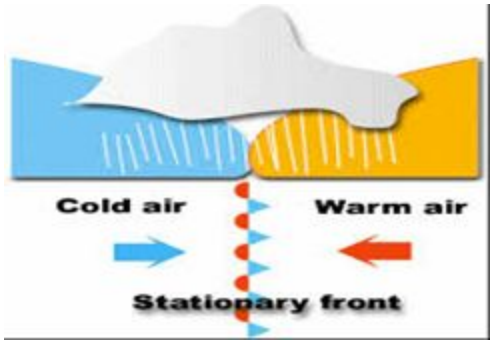
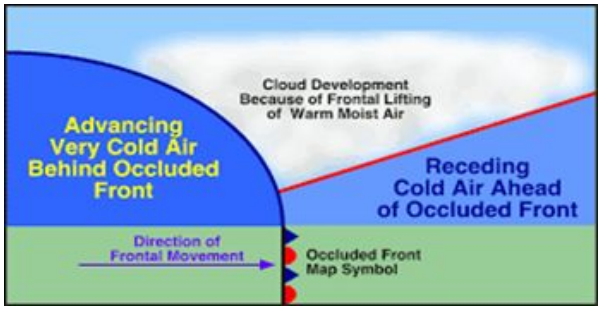
Fact One: Causes		Fact Two: Dangers
	Tornado definition:	
Fact Three: Safety-include technology		Other interesting facts

10. In the Venn diagram compare and contrast the similarities and differences between tornadoes and hurricanes. You must include 2 items in each section.



11**. Label and Draw** the a diagram of a **warm front**, a **cold front**, a **stationary front**, and an **occluded front** in the boxes below. Include their symbols and show what type of weather occurs in each.

Warm Front **RAIN** 	Cold Front **POSSIBLE THUNDERSTORM** 

Stationary Front **RAIN FOR DAYS**  	Occluded Front **HEAVY RAIN** 

12. Classification: List and describe the 4 types of air masses below:

a.

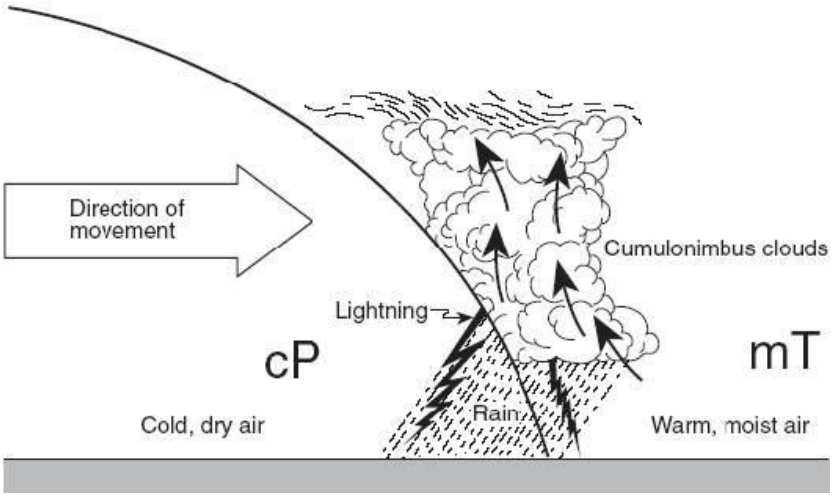
Tropical Continental	**Warm air mass over land**
Polar Maritime	**Cold air mass over water**
Tropical Maritime	**Warm air mass over water**
Polar Continental	**Cold air mass over land**

b. How are these air masses similar? How are they different?	**Polar Continental and Polar Maritime= both cold air masses, different in land and water** **Tropical Continental and Tropical Maritime= both warm air masses, different in land in water** **Polar Maritime and Tropical Maritime= different temperature, both over water** **Polar Continental and Tropical Continental= different temperature, both over land**

c. Use the map to identify where in the continental United States we can find an example of each of the 4 identified air masses.

Maritime Tropical	**GULF OF MEXICO**
Maritime Polar	**North Pacific Ocean**
Continental Tropical	**New Mexico, Texas, AZ**
Continental Polar	**ND, MT, MN**

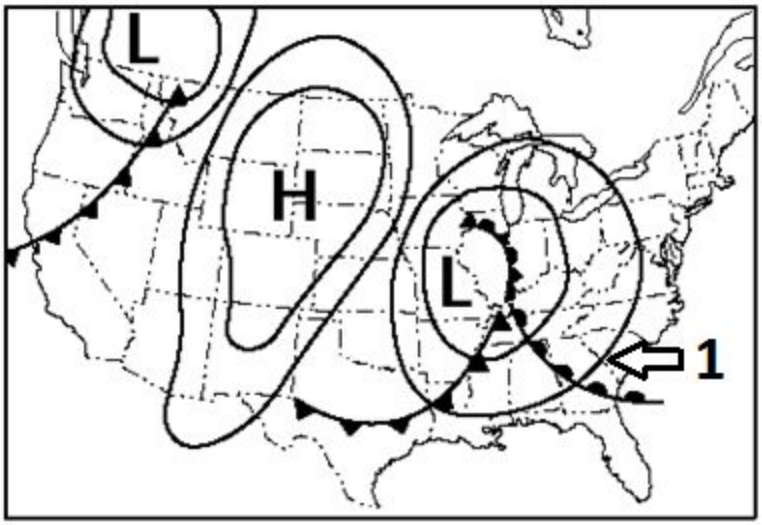
13. Base your answers to the following questions on the cross section below, which shows a typical cold front moving over Pennsylvania in early summer.



a. Explain why the air rises in the picture above?	**Colder, denser air moves below the warmer, less dense air causing the warm air to rise**
b. Identify the front and describe the weather occurring along the front.	**Cold Front- Thunderstorms and rain result as warm, moist rises quickly and condenses**

Central Canada was the source of the continental polar air mass shown above.

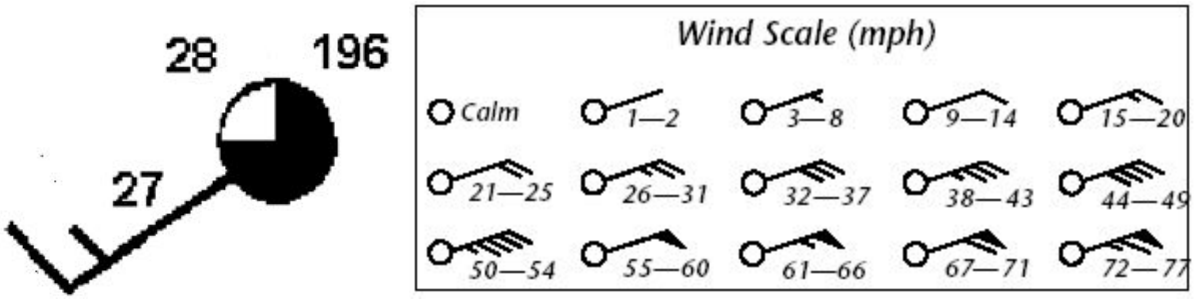
c. Identify the source of the warm air mass shown in the cross section.	**SOUTHEAST US**



14. Look at the weather map above, if front number 1 continues to move northeast towards Pennsylvania what type of weather would you predict? Give two pieces of evidence to support your response.

a) Warm front- periods of rain, heavy at times, overcast because warm fronts move more slowly
b) Evidence- L= low pressure and round semi-circles= warm front

15. Base your answers to the following questions on the station model below, which shows the weather conditions at Rochester, New York, at 4 p.m. on a particular day in June.



a. According to the station model, what is the cloud cover at this city.	**Cloud cover= 75%**
b. The winds shown by this station model are recorded at what wind speed?	**Wind Speed=15-20 mph**